

REVISED EXHIBIT B-3, DATED AUGUST 26, 2014
CRANES AND OVERHEAD HOISTS
PREVENTATIVE MAINTENANCE CUMMULATIVE CHECKLIST

Upon completion of the preventive maintenance inspection (PM) a typed report (summarizing all items found non-compliant with the minimum ANSI Standards and minimum Manufacturer Standards shall be properly identified with recommended corrective actions to be taken listed in a prioritized repair list. The cost of these recommended repairs shall be itemized into two categories: 1) labor, and 2) material. The following are minimum requirements for annual, comprehensive visual inspections:

ITEM NO.	ITEMS TO BE INSPECTED	DESCRIPTION OF INSPECTION
1.	Machine components	Lubricate all machine components according to manufacturer's specifications.
2.	Oil reservoirs	Inspect all oil reservoir levels and add oil as required.
3.	Oil leaks	Inspect for any oil leaks and report them on service report.
4.	Bridge and trucks	Inspect for bent or damaged members, evidence of loose bolts, rivets, guards, and broken welds.
5.	Trolley and rails	Inspect for bent or damaged members, evidence of loose bolts, rivets, guards, rail clamps, and broken welds.
6.	Runway rails and clamps	Inspect for loose, broken or missing rail clamps, bolts, wedges, connectors, end stops, and rail switches.
7.	Handrails, walkways, and ladders	Inspect for loose, missing, bent deteriorated, loose, members, bolts, rivets, welds, and hangers.
8.	End stops, sweeps and bumpers	Inspect for loose, broken or bent bumper members, sweeps and end stops.
9.	Guards	Inspect for loose, missing, broken, or bent members.
10.	Crane alignment	Inspect for unusual wear on rails. Run crane, bridge, or trolley assembly against end rail stop to check alignment.
11.	Bridge wheels and bearings	Inspect for wear, flat spots, chips, flange wear, cracks, loose axle-pins, or securing devices. <u>Wheel bearings:</u> Inspect clearance, chatter, loose bearing caps, and lubrication.
12.	Bridge, trolley & hoists Shafts and coupling	Inspect shafts for vibration, cuts, nicks, loose or worn keyways, and misalignment. Inspect couplings for wear, loose bolts, keys, and misalignment. Inspect bearings for clearance, chatter, loose bearing caps and lubrication.
13.	Bridge, trolley & hoists Gears and cases	Inspect gears for worn teeth, loose set screws and keys. Inspect guards and covers. Check gear cases for excessive noise and vibration, and proper lubrication.
14.	Bridge, trolley & hoist Brakes	Inspect for wear in linkage, pins and cams, weakness of springs, wear and condition of lining, smoothness of drum and clearance between drum or disk brakes. Inspect for improper solenoid air gap; evidence of overheating, damaged brass, air gap material, and loose core lamination, delay or restriction in opening of brakes. Check fluid level.
15.	Hoist sheaves	Inspect for wear, damage, sheave groove radius, lube lines, bushings, pin locking bar, bolts, and lube fittings.
16.	Hoist load hooks and blocks	Inspect for damage, wear to hook, proper operation of load hook safety latch, nuts, "mousing" device, and swivel. Inspect blocks for wear to sheaves, check plates, loose pins, bolts, and guards. Inspect drip pans securing bolts, gaskets, damage and clearance.

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ITEM NO.	ITEMS TO BE INSPECTED	DESCRIPTION OF INSPECTION
17.	Hoist wire rope, fastenings and terminal hardware	Inspect wire rope, sockets, swivels, trunions, and connections for damage, broken wire/strands and proper lubrication. Lubricate as required.
18.	Capacity signs	Inspect for mounting bolts, brackets, and damage. Check markings on load signs for proper rating.
19.	Main disconnect switch	Operate switch, inspect supports (or) operating members, overheating, and loose connections.
20.	Trolley conductors and collectors	Inspect insulators, clamps, connectors, wires, collectors, shoes, and loose (or) damaged (or) misaligned wheels.
21.	Main conductors and collectors	Inspect insulation, clamps, connectors, collectors, wires, shoes, and wheels.
22.	All wiring and fuses	Inspect all connections, insulation, and readily accessible wiring for evidence of overheating and deterioration.
23.	Bridge, trolley & hoists Control panel and relays	Inspect all contacts for proper alignment, signs of excess heating or unusual arcing. Inspect all coils, contact leads, shunts and wires, fuses or overload devices for loose connections and signs of overheating. Inspect panel boards and arc shields for cracks, loose bolts, dirt and moisture. Check panel markings for legibility. Inspect speed control resistors for damaged segments or parts. Inspect all insulation and connections for signs of overheating.
24.	Bridge, trolley & hoists Controller	Inspect for loose tension springs, broken, cracked, or loose handles, rough or burned contact segments, segment dividers, insulators and proper contact pressure, unusual arcing, worn or loose cams, rollers or bins and loose connections. Check identifying and direction labels. Inspect all insulation and connections for signs of overheating.
25.	Bridge, trolley and hoist motors	Inspect for damage, bearing noise, vibration and lubrication. Inspect "commutators," slip rings and brushes for evidence of sparking, excessive brush wear or improper seating. Check brush holder for missing hardware, proper alignment, and spring tension.
26.	Hoist limit switches	Inspect all electrical and mechanical components for malfunction including contacts, springs, ratchets, pins, arms, insulators, rollers, cams and dogs. Inspect gaskets, counterweights, guides, securing bolts, and guards.
27.	Bridge lighting system	Inspect lighting fixtures for damaged support, brackets, sockets, globes or lenses. Inspect wiring for loose connections and damaged conductors. Inspect raceway system for missing straps, loose or damaged conduits and junction boxes.

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ITEM NO.	ITEMS TO BE INSPECTED	DESCRIPTION OF INSPECTION
28.	Warning devices	Inspect for proper operation or sirens, horns, bells, and lights. Check switches and inspect wiring and connections.
29.	Safety switches	Inspect all safety switches for proper operation. Check wiring and connections for evidence of overheating.
30.	Trolley wheels and bearings	Inspect wheels for wear, flat spots, chips, flange wear, cracks, loose axle-pins or securing devices. <u>Wheel bearings:</u> Inspect clearance, chatter, loose bearing caps, and lubrication.
31.	Load drum	Inspect for wear, cracks, sharp ridges, bearing clearance, noise, vibration, and lubrication.
32.	Auxiliary Hoist Shafts and Couplings	Check for worn keyways & tightness of shaft & couplings
33.	Main Hoist Load Brake	Check for proper operation
34.	Auxiliary Hoist Load Brake	Check for proper operation
35.	Trolley Control Panel and Relays	Open control panel & inspect components for wear & proper operation. Check that all electrical connections are tight and that controllers are properly protected per NEC (Fuses, Overloads, Etc.)
36.	Auxiliary Hoist Gears and Cases	Check oil levels and fill as necessary
37.	Bridge Gears and Cases	Check oil levels and fill as necessary
38.	Bridge Brakes	Remove covers, check for proper operation. Inspect for wear and adjust as necessary
39.	Main Hoist Magnetic Brake	Remove covers, check for proper operation. Inspect for wear and adjust as necessary
40.	Auxiliary Hoist Magnetic Brake	Remove covers, check for proper operation. Inspect for wear and adjust as necessary
41.	Bridge Motor	Inspect slip rings & brushes for wear.
42.	Magnetic Cable Reel	Verify that torque settings are correct. Check cord for damage or wear. Insure that all electrical connections are tight.
43.	Main Hoist Gears and Cases	Check oil levels and fill as necessary

NOTE (1): The inspection will include topping of oil levels, lubrication of the crane, adjusting of brakes, and non-destructive testing (NDT) of hoist hooks.

NOTE (2): For any detectable repairs, contact the Department Technical Representative (CTR) for approved recommended action.